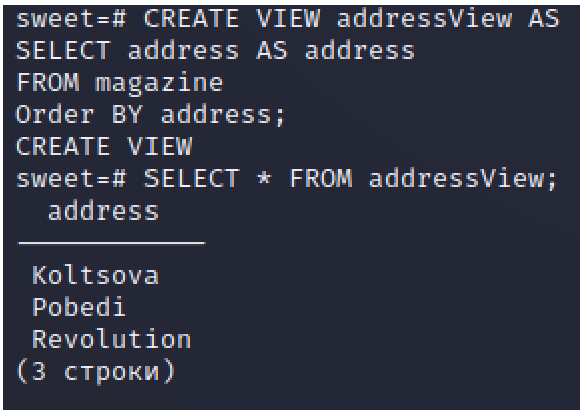
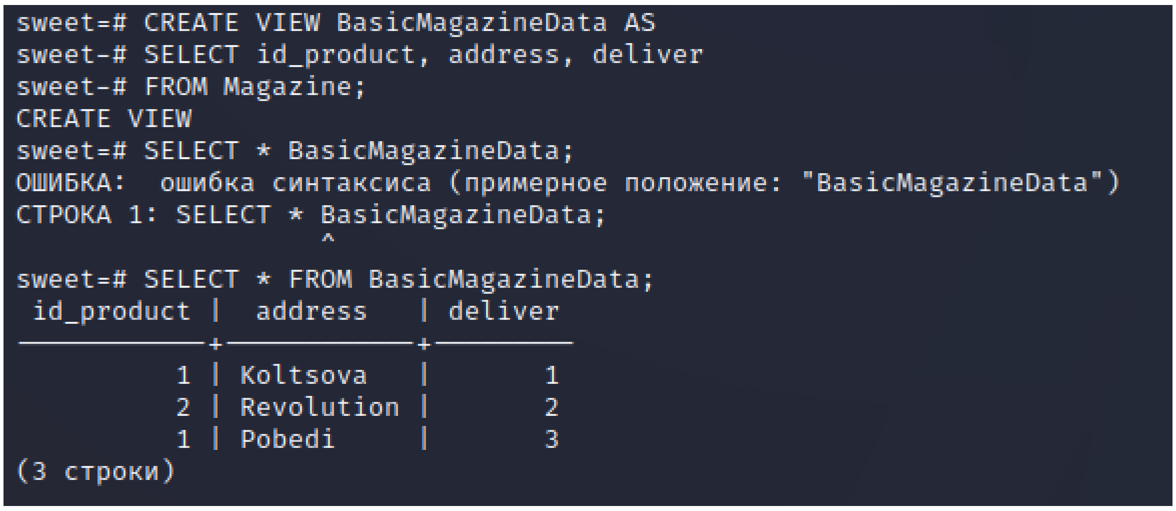
SQL-представления.

Использование представлений для скрытия столбцов



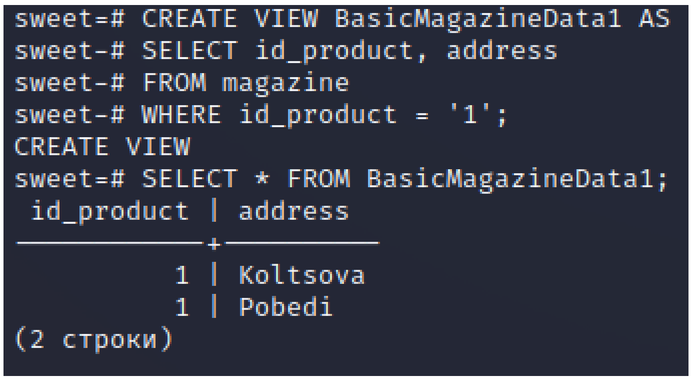
```
sweet=# CREATE VIEW addressView AS
SELECT address AS address
FROM magazine
Order BY address;
CREATE VIEW
sweet=# SELECT * FROM addressView;
  address
────────────
 Koltsova
 Pobedi
 Revolution
(3 строки)
```

Выведение таблицы только с определенными, заданными условиями



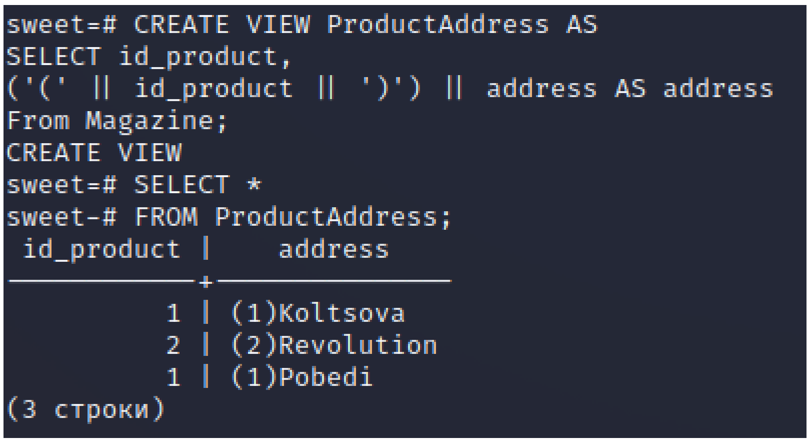
```
sweet=# CREATE VIEW BasicMagazineData AS
sweet-# SELECT id_product, address, deliver
sweet-# FROM Magazine;
CREATE VIEW
sweet=# SELECT * BasicMagazineData;
ОШИБКА:  ошибка синтаксиса (примерное положение: "BasicMagazineData")
СТРОКА 1: SELECT * BasicMagazineData;
                   ^
sweet=# SELECT * FROM BasicMagazineData;
 id_product |  address   | deliver
────────────+────────────+─────────
          1 | Koltsova   |       1
          2 | Revolution |       2
          1 | Pobedi     |       3
(3 строки)
```

Использование сокрытия определенных строк в столбце с использование WHERE



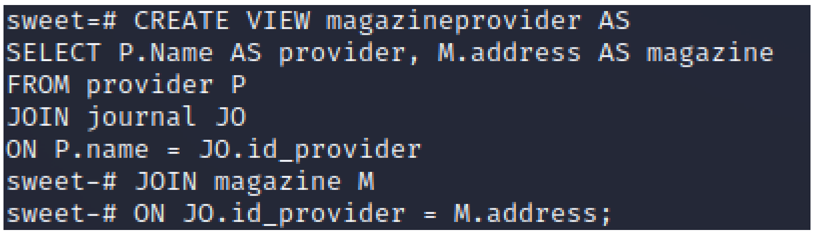
```
sweet=# CREATE VIEW BasicMagazineData1 AS
sweet-# SELECT id_product, address
sweet-# FROM magazine
sweet-# WHERE id_product = '1';
CREATE VIEW
sweet=# SELECT * FROM BasicMagazineData1;
 id_product | address
────────────+──────────
          1 | Koltsova
          1 | Pobedi
(2 строки)
```

Использование представления для отображения вычисляемых столбцов



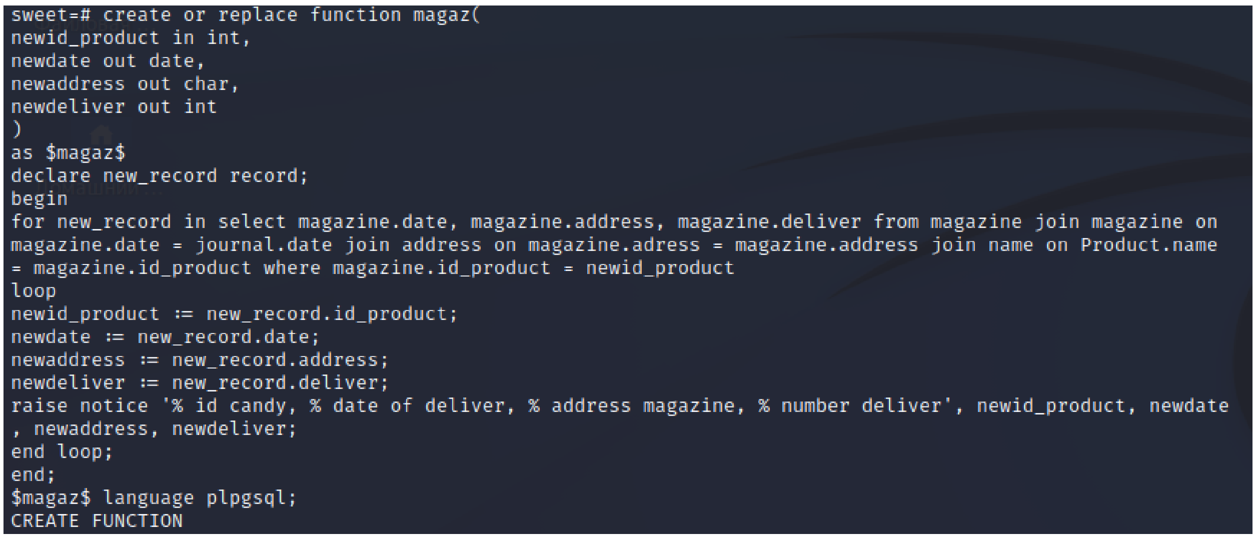
```
sweet=# CREATE VIEW ProductAddress AS
SELECT id_product,
('(' || id_product || ')') || address AS address
From Magazine;
CREATE VIEW
sweet=# SELECT *
sweet-# FROM ProductAddress;
 id_product |    address
------------+-------------
          1 | (1)Koltsova
          2 | (2)Revolution
          1 | (1)Pobedi
(3 строки)
```

Использование представления для скрытия сложного синтаксиса



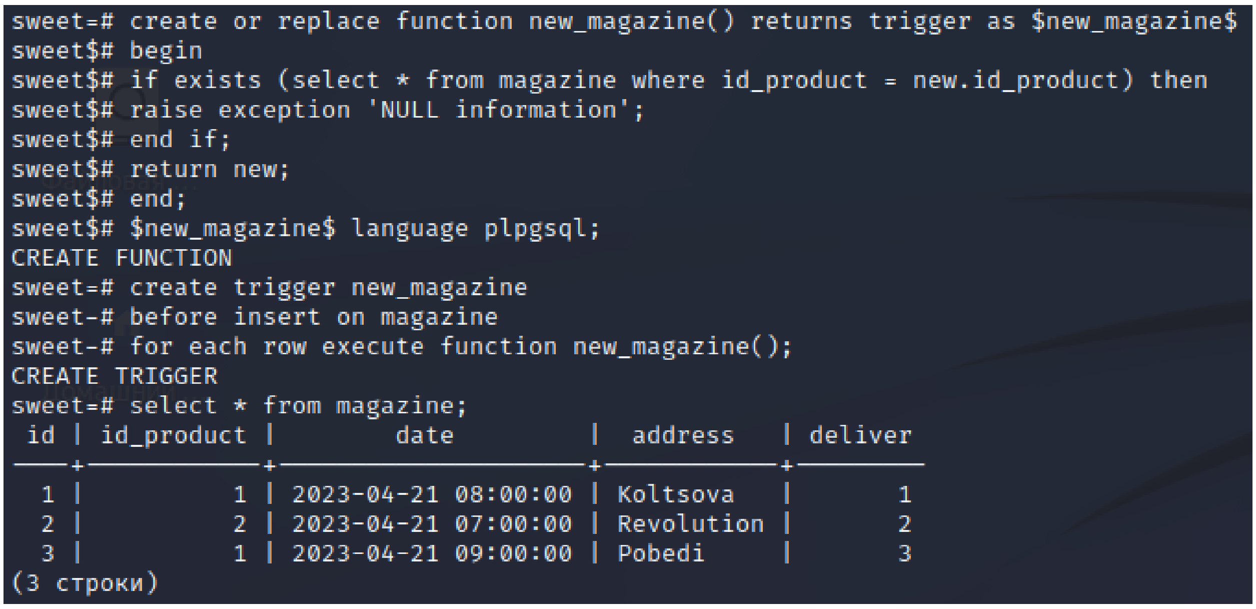
```
sweet=# CREATE VIEW magazineprovider AS
SELECT P.Name AS provider, M.address AS magazine
FROM provider P
JOIN journal JO
ON P.name = JO.id_provider
sweet-# JOIN magazine M
sweet-# ON JO.id_provider = M.address;
```

Хранимая процедура.

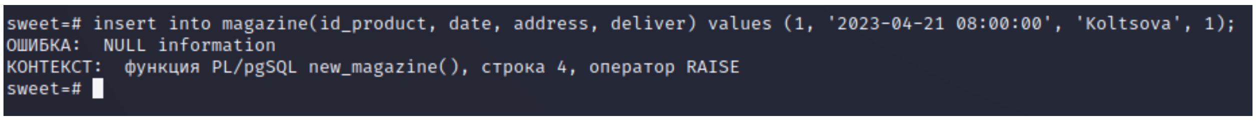


```
sweet=# create or replace function magaz(
newid_product in int,
newdate out date,
newaddress out char,
newdeliver out int
)
as $magaz$
declare new_record record;
begin
for new_record in select magazine.date, magazine.address, magazine.deliver from magazine join magazine on
magazine.date = journal.date join address on magazine.adress = magazine.address join name on Product.name
= magazine.id_product where magazine.id_product = newid_product
loop
newid_product := new_record.id_product;
newdate := new_record.date;
newaddress := new_record.address;
newdeliver := new_record.deliver;
raise notice '% id candy, % date of deliver, % address magazine, % number deliver', newid_product, newdate
, newaddress, newdeliver;
end loop;
end;
$magaz$ language plpgsql;
CREATE FUNCTION
```

Использование триггеров для проверки допустимости вводимых данных



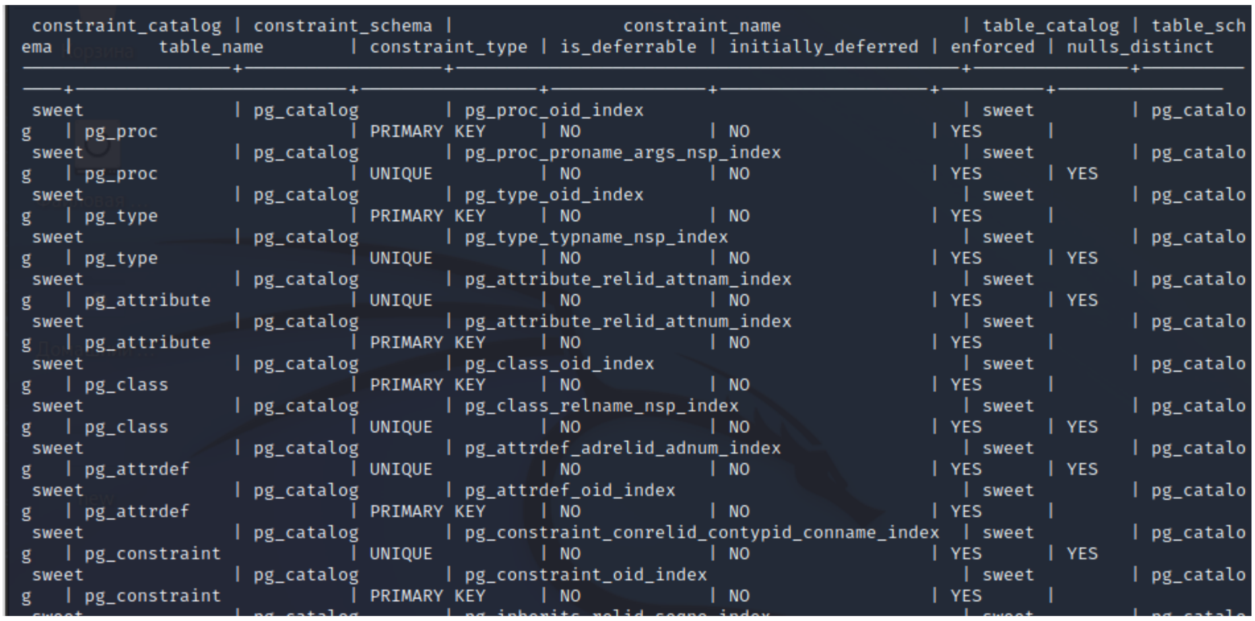
```
sweet=# create or replace function new_magazine() returns trigger as $new_magazine$
sweet$# begin
sweet$# if exists (select * from magazine where id_product = new.id_product) then
sweet$# raise exception 'NULL information';
sweet$# end if;
sweet$# return new;
sweet$# end;
sweet$# $new_magazine$ language plpgsql;
CREATE FUNCTION
sweet=# create trigger new_magazine
sweet-# before insert on magazine
sweet-# for each row execute function new_magazine();
CREATE TRIGGER
sweet=# select * from magazine;
 id | id_product |         date          |  address   | deliver
----+------------+-----------------------+------------+---------
  1 |          1 | 2023-04-21 08:00:00 | Koltsova   |       1
  2 |          2 | 2023-04-21 07:00:00 | Revolution |       2
  3 |          1 | 2023-04-21 09:00:00 | Pobedi     |       3
(3 строки)
```



```
sweet=# insert into magazine(id_product, date, address, deliver) values (1, '2023-04-21 08:00:00', 'Koltsova', 1);
ОШИБКА:  NULL information
КОНТЕКСТ:  функция PL/pgSQL new_magazine(), строка 4, оператор RAISE
sweet=#
```

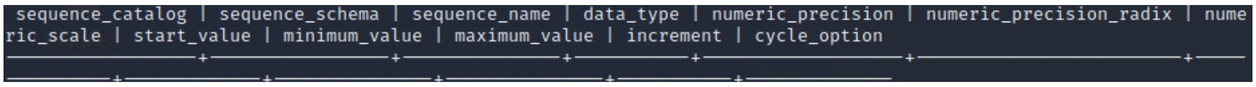
Словарь метаданных.

Получим список ограничений



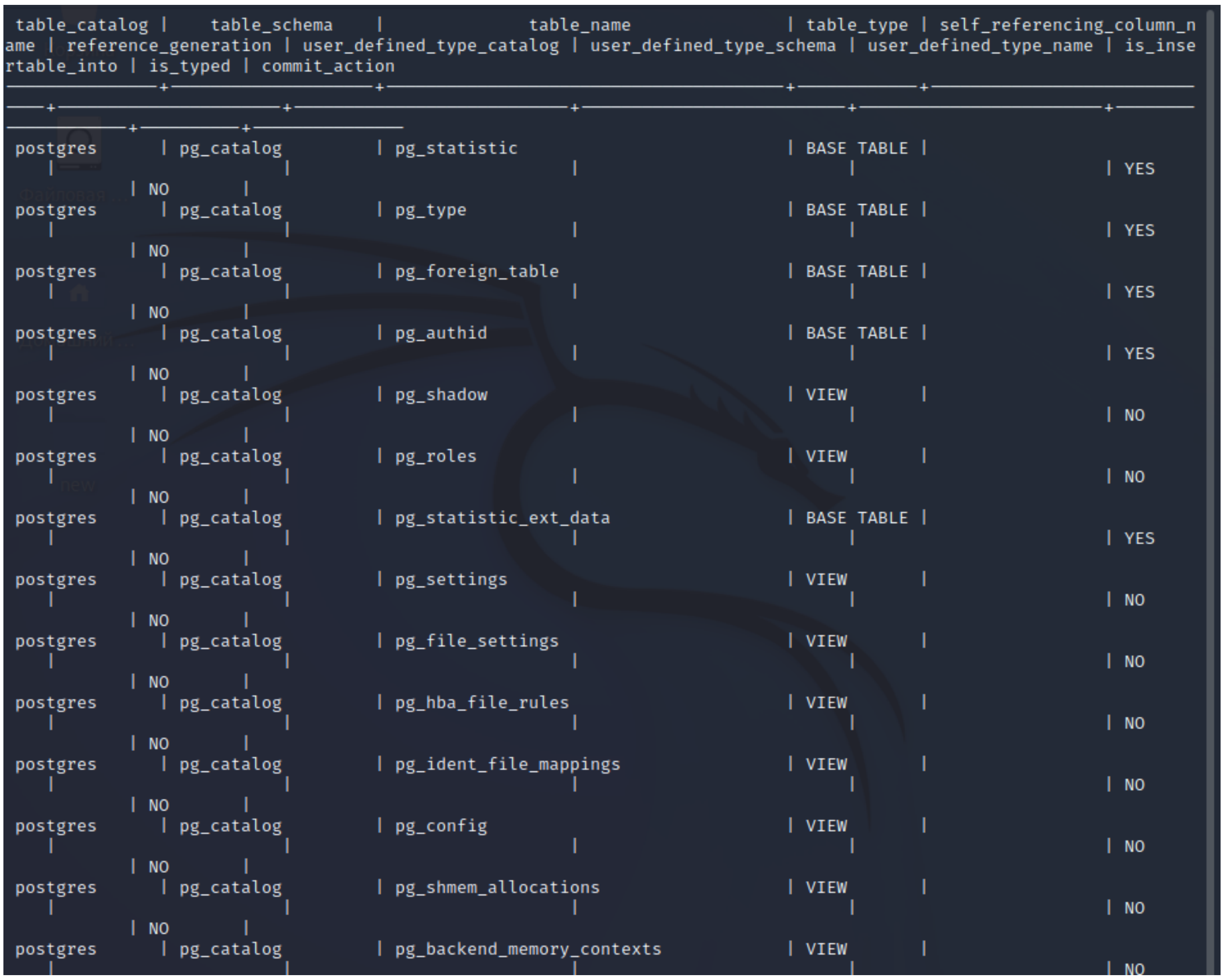
```
 constraint_catalog | constraint_schema |                constraint_name                 | table_catalog | table_sch
ema |        table_name         | constraint_type | is_deferrable | initially_deferred | enforced | nulls_distinct
--------------------+-------------------+------------------------------------------------+---------------+----------
----+---------------------------+-----------------+---------------+--------------------+----------+----------------
 sweet              | pg_catalog        | pg_proc_oid_index                              | sweet         | pg_catalo
g   | pg_proc                   | PRIMARY KEY     | NO            | NO                 | YES      |
 sweet              | pg_catalog        | pg_proc_proname_args_nsp_index                 | sweet         | pg_catalo
g   | pg_proc                   | UNIQUE          | NO            | NO                 | YES      | YES
 sweet              | pg_catalog        | pg_type_oid_index                              | sweet         | pg_catalo
g   | pg_type                   | PRIMARY KEY     | NO            | NO                 | YES      |
 sweet              | pg_catalog        | pg_type_typname_nsp_index                      | sweet         | pg_catalo
g   | pg_type                   | UNIQUE          | NO            | NO                 | YES      | YES
 sweet              | pg_catalog        | pg_attribute_relid_attnam_index                | sweet         | pg_catalo
g   | pg_attribute              | UNIQUE          | NO            | NO                 | YES      | YES
 sweet              | pg_catalog        | pg_attribute_relid_attnum_index                | sweet         | pg_catalo
g   | pg_attribute              | PRIMARY KEY     | NO            | NO                 | YES      |
 sweet              | pg_catalog        | pg_class_oid_index                             | sweet         | pg_catalo
g   | pg_class                  | PRIMARY KEY     | NO            | NO                 | YES      |
 sweet              | pg_catalog        | pg_class_relname_nsp_index                     | sweet         | pg_catalo
g   | pg_class                  | UNIQUE          | NO            | NO                 | YES      | YES
 sweet              | pg_catalog        | pg_attrdef_adrelid_adnum_index                 | sweet         | pg_catalo
g   | pg_attrdef                | UNIQUE          | NO            | NO                 | YES      | YES
 sweet              | pg_catalog        | pg_attrdef_oid_index                           | sweet         | pg_catalo
g   | pg_attrdef                | PRIMARY KEY     | NO            | NO                 | YES      |
 sweet              | pg_catalog        | pg_constraint_conrelid_contypid_conname_index  | sweet         | pg_catalo
g   | pg_constraint             | UNIQUE          | NO            | NO                 | YES      | YES
 sweet              | pg_catalog        | pg_constraint_oid_index                        | sweet         | pg_catalo
g   | pg_constraint             | PRIMARY KEY     | NO            | NO                 | YES      |
```

Получим список последовательностей.



```
 sequence_catalog | sequence_schema | sequence_name | data_type | numeric_precision | numeric_precision_radix | nume
ric_scale | start_value | minimum_value | maximum_value | increment | cycle_option
------------------+-----------------+---------------+-----------+-------------------+-------------------------+-----
----------+-------------+---------------+---------------+-----------+--------------
```

Получим список таблиц.



```
 table_catalog |    table_schema    |             table_name              | table_type | self_referencing_column_n
ame | reference_generation | user_defined_type_catalog | user_defined_type_schema | user_defined_type_name | is_inse
rtable_into | is_typed | commit_action
---------------+--------------------+-------------------------------------+------------+---------------------------
----+----------------------+---------------------------+--------------------------+------------------------+--------
------------+----------+---------------
 postgres      | pg_catalog         | pg_statistic                        | BASE TABLE |
    |                      |                           |                          |                        | YES
            | NO       |
 postgres      | pg_catalog         | pg_type                             | BASE TABLE |
    |                      |                           |                          |                        | YES
            | NO       |
 postgres      | pg_catalog         | pg_foreign_table                    | BASE TABLE |
    |                      |                           |                          |                        | YES
            | NO       |
 postgres      | pg_catalog         | pg_authid                           | BASE TABLE |
    |                      |                           |                          |                        | YES
            | NO       |
 postgres      | pg_catalog         | pg_shadow                           | VIEW       |
    |                      |                           |                          |                        | NO
            | NO       |
 postgres      | pg_catalog         | pg_roles                            | VIEW       |
    |                      |                           |                          |                        | NO
            | NO       |
 postgres      | pg_catalog         | pg_statistic_ext_data               | BASE TABLE |
    |                      |                           |                          |                        | YES
            | NO       |
 postgres      | pg_catalog         | pg_settings                         | VIEW       |
    |                      |                           |                          |                        | NO
            | NO       |
 postgres      | pg_catalog         | pg_file_settings                    | VIEW       |
    |                      |                           |                          |                        | NO
            | NO       |
 postgres      | pg_catalog         | pg_hba_file_rules                   | VIEW       |
    |                      |                           |                          |                        | NO
            | NO       |
 postgres      | pg_catalog         | pg_ident_file_mappings              | VIEW       |
    |                      |                           |                          |                        | NO
            | NO       |
 postgres      | pg_catalog         | pg_config                           | VIEW       |
    |                      |                           |                          |                        | NO
            | NO       |
 postgres      | pg_catalog         | pg_shmem_allocations                | VIEW       |
    |                      |                           |                          |                        | NO
            | NO       |
 postgres      | pg_catalog         | pg_backend_memory_contexts          | VIEW       |
    |                      |                           |                          |                        | NO
```